

CLAIMS

1. A circuit connecting material for connection of

a first circuit member having a plurality of first circuit electrodes formed on the main surface of a first circuit board and

5 a second circuit member having a plurality of second circuit electrodes formed on the main surface of a second circuit board,

with said first and second circuit electrodes opposing each other, the circuit connecting material comprising an adhesive composition and covered particles comprising conductive particles with portions of
10 their surfaces covered by insulating fine particles,

wherein the mass of said insulating fine particles constitutes 2/1000 to 26/1000 of the mass of said conductive particles.

2. A circuit connecting material for connection of

a first circuit member having a plurality of first circuit electrodes formed on the main surface of a first circuit board and
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a second circuit member having a plurality of second circuit electrodes formed on the main surface of a second circuit board,

with said first and second circuit electrodes opposing each other, the circuit connecting material comprising an adhesive composition and covered particles comprising conductive particles with portions of
20 their surfaces covered by insulating fine particles,

wherein said conductive particles have nuclei comprising a polymer, and

the mass of said insulating fine particles constitutes 7/1000 to
25 86/1000 of the mass of said nuclei.

3. A circuit connecting material for connection of

a first circuit member having a plurality of first circuit electrodes formed on the main surface of a first circuit board and

a second circuit member having a plurality of second circuit electrodes formed on the main surface of a second circuit board,

5 with said first and second circuit electrodes opposing each other, the circuit connecting material comprising an adhesive composition and covered particles comprising conductive particles with portions of their surfaces covered by insulating fine particles,

10 wherein the specific gravity of said covered particles is 97/100 to 99/100 of the specific gravity of said conductive particles.

4. A circuit connecting material according to claim 3, wherein in said covered particles, 5 to 60% of the surfaces of said conductive particles are covered by said insulating fine particles

15 5. A circuit connecting material according to any one of claims 1 to 4, wherein the mean particle size of said insulating fine particles is 1/40 to 1/10 of the mean particle size of said conductive particles.

6. A circuit connecting material according to any one of claims 1 to 5, wherein said insulating fine particles are comprising a polymer of a radical polymerizing substance.

20 7. A circuit connecting material according to any one of claims 1 to 6, wherein said adhesive composition comprises a radical polymerizing substance and a curing agent which generates free radicals in response to heating.

25 8. A circuit connecting material according to any one of claims 1 to 7, which further comprises a film-forming material comprising a phenoxy resin.

9. A circuit connecting material according to claim 8, wherein said phenoxy resin has a molecular structure derived from a polycyclic aromatic compound in the molecule.

10. A circuit connecting material according to claim 9, wherein said polycyclic aromatic compound is fluorene.

11. A circuit connecting material film comprising a circuit connecting material according to any one of claims 1 to 10 formed into a film.

12. A circuit member connection structure provided with
a first circuit member having a plurality of first circuit
electrodes formed on the main surface of a first circuit board,
a second circuit member having a plurality of second circuit
electrodes formed on the main surface of a second circuit board,
and a circuit connecting member situated between the main
surface of said first circuit board and the main surface of said second
circuit board, and connecting said first and second circuit members
together with said first and second circuit electrodes opposing each
other,

wherein said circuit connecting member is comprising a cured
circuit connecting material according to any one of claims 1 to 10,

and said first circuit electrodes and said second circuit
electrodes are electrically connected through said covered particles.

13. A circuit member connection structure according to claim 12,
wherein, when a direct current voltage of 50 V is applied between
adjacent circuit electrodes, the resistance value between said adjacent
circuit electrodes is $10^9 \Omega$ or greater.

14. A circuit member connection structure according to claim 12 or 13,

wherein at least one of said first and second circuit members is an IC chip.

15. A circuit member connection structure according to any one of claims 12 to 14, wherein the connection resistance between said first
5 circuit electrodes and said second circuit electrodes is no greater than 1 Ω .

16. A circuit member connection structure according to any one of claims 12 to 15, wherein at least one of said first and second circuit electrodes comprises an electrode surface layer comprising at least one
10 compound selected from the group comprising gold, silver, tin, platinum group metals and indium tin oxide.

17. A circuit member connection structure according to any one of claims 12 to 16, wherein at least one of said first and second circuit members comprises a board surface layer comprising at least one
15 compound selected from the group comprising silicon nitride, silicone compounds and polyimide resins.

18. A process for fabrication of a circuit member connection structure, comprising:

20 a step of situating a circuit connecting material according to any one of claims 1 to 10 between a first circuit member having a plurality of first circuit electrodes formed on the main surface of a first circuit board and a second circuit member having a plurality of second circuit electrodes formed on the main surface of a second circuit board, with said first circuit electrode and second circuit electrode opposing each
25 other; and

a step of curing said circuit connecting material by heating and

pressing.